

Appendix A
Domestic Well Sampling SOPs

SOP-25
Domestic Well Groundwater Sample
Collection

Yerington Mine Site
Standard Operating Procedure

Date: February 12, 2010

SOP-25
DOMESTIC WELL SAMPLE COLLECTION

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1.0 OBJECTIVES

The primary objective of this standard operating procedure (SOP) is to establish a uniform method for collecting water samples from domestic, commercial, and irrigation wells (herein after referred to as “domestic” wells), and to reduce the potential variability associated with purging and sampling.

2.0 SCOPE AND APPLICABILITY

This SOP will be used to support field domestic well sampling activities associated with the Yerington mine site (Site). Domestic well sampling involves two primary operations: 1) to the extent practicable, purging stagnant water from a domestic well system in a consistent manner that ideally reflects typical domestic well use, and 2) the collection of a water sample from the domestic well.

3.0 REQUIRED MATERIALS

Materials required for collecting water samples from domestic well systems at the Site are minimal given that samples are to be discharged from a spigot on the water supply line located outside of the residence directly into sample bottles without the use of additional equipment. The materials anticipated to be needed are as follows:

- Personal protection equipment (as required by the Site Health and Safety Plan)
- Domestic Well Field Sample Form
- Permanent marking pens
- Field logbook
- Resealable plastic bags
- Chain-of-Custody (COC) forms
- Shipping labels
- Shipping coolers and ice

4.0 RESPONSIBILITIES

The *Project Manager*, or designee, will have the responsibility to oversee and ensure that groundwater purging and sampling procedures are implemented in accordance this SOP and other relevant project- or Site-specific planning documents.

Field personnel will be responsible for understanding and implementation of this SOP during domestic well sampling activities as well as obtaining the appropriate field logbooks, forms, and records necessary to complete the field activities.

5.0 METHODS

5.1 Access Agreements from Domestic Well Owner(s)

Before a water sample can be collected from a domestic well system for the first time, a written access agreement between the well owner(s) and ARC will be required. For each domestic well proposed for sampling for the first time, the contact information (name, mailing address, phone number(s)) of the well owner(s) will be identified using information available at county/local agencies. Once a well owner(s) has been identified, an access agreement to allow sampling of the domestic well will be sent to the well owner(s) by certified mail at least 30 days in advance of the proposed initial sampling date. It will be explicitly noted in the agreement that domestic well samples will be collected from the water supply line outside of the residence (ARC contractors will not enter a residence under any circumstances to collect a water sample).

If the domestic well owner(s) and/or residents do not respond to the mailing approximately two weeks after sending the proposed agreement, contact will be attempted by other means (mailing, phone call, direct contact, etc.). If contact with the well owner(s) is unsuccessful after another two weeks has elapsed, additional attempts may be attempted as appropriate. Completed access agreements will be maintained for the duration of the agreement in the project file at Brown and Caldwell's Carson City office.

ARC will keep EPA informed of access agreement status during this process (i.e., after the first two weeks following the initial mailing and after the second alternative attempt at contact). Under no circumstances will a water sample be collected from a domestic well system without having a valid written access agreement in place. This may limit the actual number of domestic wells sampled during a sampling event compared to wells summarized in Table 2-1, or additional wells identified after EPA approval of this DWMP. ARC plans to discuss the status of access agreements prior to the start of the March 2010 and subsequent sampling events.

5.2 General Considerations

Sampling of domestic wells involves two primary operations. These include the purging of stagnant water from the well followed by the collection of a sample. Good communication is essential to the ultimate success of a domestic well sampling project. This includes communication within the project team, as well as communication with the client and analytical laboratory, when establishing project objectives.

Good communication with the project team, laboratory, client, and, if appropriate, regulatory agencies, includes complete project-specific planning documents such as field sampling plans (FSPs), quality assurance project plans (QAPPs), and scope of work (SOW) documents for subcontracted laboratories. Plans should include detailed information with respect to Site-specific requirements, with reference to SOPs wherever possible, and risk criteria that will be used to assess the data. The QAPP and laboratory SOW (of which the QAPP can be part) should contain detailed information on what is expected from the laboratory regarding the methods to be used, required analytical detection limits, quality assurance (QA) measures, and deliverables (especially electronic deliverable formats).

In addition to good communication, the project plans should consider sampling equipment, equipment decontamination, sampling sequence, and field quality assurance/quality control (QA/QC) samples. These are described in the following sections.

5.2.1 Sampling Equipment

During previous domestic well sampling events at the Site, water samples from domestic well systems were typically discharged directly into the appropriate sample containers from a spigot on the water supply line located outside of the residence. To help ensure comparability of historic and new data, the same sampling method will be followed for future sampling events and samples shall be collected from the same sample location each time, as conditions allow. Therefore, it is not anticipated that specific equipment for sampling of domestic wells will be used.

5.2.2 Equipment Decontamination

The sampling procedure does not require use of equipment at multiple domestic well sampling locations. Consequently, there is no equipment that requires decontamination between sampling locations.

5.2.3 Sequence of Sampling

The sequence in which domestic wells are sampled is not relevant from a chemical composition standpoint because sampling equipment that would need decontaminated between multiple sampling locations is not used, and access to the wells is controlled in part by the availability of a residence to provide access to field personnel to sample the respective well on a specific day.

5.2.4 Field QA/QC Methods

To assess the accuracy and precision of the field methods and laboratory analytical procedures, quality assurance/quality control (QA/QC) samples are collected during the sampling program according to the project Work Plan. QA/QC samples may be labeled with QA/QC identification numbers or fictitious identification numbers if blind submittal is desired, and are sent to the laboratory with the other samples for analyses. The frequency, types, and locations of QA/QC samples are specified in the project QAPP or Work Plan. Examples of QA samples anticipated to be collected during domestic well sampling include field blanks, duplicate samples, and matrix spike/matrix spike duplicate (MS/MSD) samples.

5.3 Planning

The analytical requirements and schedule must be well defined and clearly communicated to the analytical laboratory, project management, and regulatory agencies before conducting the field work. Written communication is encouraged, in particular to document requirements for specific analytical methods, detection limits, and other special needs. Written communication should include a detailed FSP and/or SOW that includes the Site QAPP requirements.

5.3.1 Preparatory Office Activities

Materials and sample bottles should be organized in the office before embarking on a field sampling project to the extent practicable. The time spent in the field should be spent on sample collection. General preparatory activities to be completed in the office are as follows.

Land Owner Notification and Communication

Written notification of intent to sample will be sent to the land owners/occupants no sooner than two weeks before the scheduled sampling event. The notification will include the range of sampling event dates that personnel may be on the property. As needed, some well owners/occupants may be contacted by phone. The sampling procedure may be discussed with the land owner/occupant, but the results of previous analyses will not be discussed. Opinions about the Site will not be discussed with the land owner/occupant. The client has a fact sheet that lists what facts may be discussed with land owners/occupants. Topics not included on the fact sheet will be avoided. If necessary, the land owner/occupant will be provided with the client's phone number to contact for more information.

Analytical Parameter Identification and Laboratory Notification

The proposed list of chemical parameters to be analyzed by the laboratory will be reviewed and updated as required by the client and/or regulatory agency. The analytical laboratory will be notified at least three weeks before the first date of the anticipated sampling event. This will allow the lab sufficient time to plan for the anticipated workload and also to ship the sample bottles.

Sample Containers and Preservatives

The appropriate sample containers and associated preservatives will be supplied by the laboratory that will be responsible for the analyses. Sample containers should be organized and inventoried several days before initiation of the sampling program to provide sufficient time to rectify problems, should they occur. Whenever possible, pre-printed sample labels should be created before mobilization. Sample containers with acid preservatives should not be more than six months old and should have been stored in a clean secure location. Some preservatives may have an even shorter shelf life.

5.3.2 Preparatory Field Activities

Prior to starting daily sampling activities, field personnel should gather a sufficient quantity of sample containers, field supplies, COCs, labels, and coolers with ice for the day's planned activities.

Upon arrival at a well location, the occupant should be notified that well purging and sampling activities will occur. If the occupant is at home, a copy of the "Domestic Well Testing Program" flyer should be provided, and if they are not home the flyer should be left at the front door indicating the well ID and date and time the sample was collected. Also, the condition of the well casing and water supply line(s) should be observed before purging/sampling. If observed, signs of damage should be documented. Prior to the first sampling event at each well, the following documentation activities will be performed: 1) directions to the property/residence; 2) a detailed written description, photograph and, if needed, a diagram of the selected well sampling point location; and 3) a detailed written description, photograph and, if needed, a diagram of the well purge water discharge location.

5.4 Purging And Sampling Procedures

This section provides a description of the procedures to be used for domestic well sampling. These activities are described in more detail in the following sections. Many of these steps have record-keeping components which are discussed in Section 5.5.

5.4.1 Well Purging

Domestic wells must be purged before the collection of water samples by opening the spigot and allowing the water to run for approximately five minutes (or at least 25 gallons have been purged). A spigot closest to the well should be used for purging and sampling to minimize the amount of piping and reduce purge time, however, an alternate spigot requested by the homeowner may be used as long as it meets the requirements. A spigot should be located that does not draw water from a water softener tank, in-line filter, or other treatment system. The water should be drawn directly from the well. Purge water will be directed onto the ground, onto landscaping in the general area of the sampled well, or to an area specified by the domestic well owner or resident.

Purging Instructions:

- 1) Following written or verbal pre-notification of the landowner, arrive at the location and immediately knock on the front door to see if anyone is home and to announce your presence. A copy of the “Domestic Well Testing Program” flyer should be provided. There is no reason to enter the home.
- 2) Go to the “*preferred sample location*” as identified on previous field sampling records (i.e. the outside spigot closest to the well).
- 3) Remove the hose from the spigot. If necessary, the hose may be left on the spigot for purging, but it must be removed before sampling.
- 4) Turn on the spigot.
- 5) Allow water to run through the spigot for approximately five minutes or until approximately 25 gallons of water has discharged. Direct the purge water onto the ground, onto landscaping in the general area of the well, or to an area specified by the domestic well owner or resident.
- 6) Ensure that the spigot or other well components is returned to its pre-sampling condition.

5.4.2 Groundwater Sampling

It is important that wells be sampled as soon as possible after purging. Sampling a domestic well requires minimal equipment since the domestic water supply system includes a pump and pressurization tank that delivers a reliable sample stream under pressure.

Required Equipment:

- Sample bottles and new nitrile gloves.

Sampling Instructions:

- 1) When approximately five minutes have elapsed or at least 25 gallons have been purged, the domestic water supply system is ready to be sampled.
- 2) If left on during purging, remove the hose from the spigot.
- 3) Don a new pair of nitrile gloves.
- 4) Collect the samples by filling the required containers directly from the spigot. The valve on the spigot should be turned almost to the closed position to provide a low sampling flow rate that is as laminar as possible. The lip of the sample container should not be allowed to touch the spigot.
- 5) Bottles should be filled as outlined in project-specific planning documents.
- 6) Turn off spigot and re-attach hose.
- 7) Complete the field documentation including field log book, field sampling form, chain of custody and sample labels.
- 8) Place samples in chilled sample cooler (if required) until they are returned to the field office and prepared for shipment.

5.4.3 Field Measurements

It is anticipated that field parameters will not be measured during purging and sampling of domestic wells.

5.5 FIELD RECORDS

Accurate field records must be maintained to document domestic well sampling activities. These records include technical field data, sample identification labels, and COC information for each sample. These records are described in detail in the following sections, and discussed in the Field Documentation and Sampling Handling SOPs (SOP-03 and SOP-01).

Specifically for domestic well sampling, information will be recorded on a “Domestic Well Field Sampling Form”(Attachment A). This form should include, at a minimum, the following information:

- Well identification
- Preferred sample location
- Actual sample location
- Sample Date
- Sampler
- Purging time
- Sampling time
- Analytes requested

- QA/QC sample collected
- General observations (sample description, weather conditions, etc.)

Data and other information should be entered using black indelible ink and should be written legibly. Entry errors should be crossed out with a single line and initialed by the person making the correction.

5.6 SAMPLE SHIPMENT

Shipment of samples to an analytical laboratory is usually required upon completion of sample collection. Proper packaging is necessary to protect the sample containers, to maintain the samples at or below a temperature of 4°C, and to comply with the applicable transportation regulations. Consistent with the requirements of Revision 5 of the Site-Wide Quality Assurance Project Plan (Environmental Standards, Inc. [ESI] and Brown and Caldwell, 2009), each cooler containing samples that require temperature preservations will contain a temperature blank. See the Sampling Handling and Management SOP (SOP-01r1) for further details.

6.0 ATTACHMENTS

Attachment A – Domestic Well Field Sampling Form

ATTACHMENT A
DOMESTIC WELL FIELD SAMPLING FORM

Yerington Mine Site Domestic Well Field Sample Form

Well ID: _____ Sampling Group: _____

Sample Date: _____

Sampler:

Preferred Sample Point Description:	Actual Sample Point Description:

Purge Time: Time On:

Time Off:

Total Purge Time: _____

Sample Time: Sample Filtered: ☐ No ☐ Yes

Analysis Requested:

QC Sample Collected:

 Uranium only (bottled water program)

Metals

Anion/Cation + Water Chem

TOC

Radiochem

Duplicate

Field Blank

MS/MSD

General Observations/Comments:
